

CLAIMS

1. Heat blanket comprising an operative unit and a control/power supply unit which can be electrically connected on one side to the power mains and on the other side to the operative unit, wherein:
- 5 a) the operative unit comprises:
- a foldable sheet,
 - a linear heating element distributed in the sheet, with a first and a second conductor extending one along the other, separated by a first electrically insulating material and enclosed by a second electrically insulating material, wherein the first and the second conductors are electrically connected to the control/power supply unit and have
- 10 respective first terminals inside the panel, connected together; and
- b) the control/power supply unit comprises:
- a power supply group for the heating element, intended for connection to the electric
- 20 mains,
- control means of the power supply for the heating element,
- characterised in that the control means comprise:
- a power supply cut-off means for the heating
- 25 element,
- a microprocessor, connected to the heating element, to the power supply group and to the cut-off group, set to detect possible anomalies in the power supply conditions of the heating element and to act upon the cut-off group interrupting the power supply
- 30 of the heating element when said anomalies take place.
2. Heat blanket according to claim 1, wherein said anomalies include one or more of the following
- 35 conditions:
- interruption of electric conduction in the

heating element;

- short circuit in the heating element;
- overheating of the heating element;
- need or suitability of periodic maintenance.

- 5 3. Heat blanket according to claim 1, wherein each anomaly detected is classified either as a temporary anomaly or as a definitive anomaly, and wherein the interruption of the power supply of the heating element is reversible in case of a temporary anomaly and irreversible in case of a definitive anomaly.
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4. Heat blanket according to claim 3, wherein a short circuit in the heating element and/or a need or suitability of periodical maintenance are classified as a definitive anomaly.
- 15 5. Heat blanket according to claim 4, wherein a decrease in impedance greater than a predetermined value, preferably 5%, is considered a short circuit.
6. Heat blanket according to claim 3, wherein overheating in the heating element and/or an interruption in electric conduction in the heating element and/or a need for or suitability of periodical maintenance are classified as temporary anomalies.
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7. Heat blanket according to claim 3, wherein a temporary anomaly is reclassified as a definitive anomaly if it repeats a predetermined number of times.
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8. Heat blanket according to claim 1, wherein the first and second conductor are coaxial, the first conductor being wound in a spiral around a core, the second conductor being wound in a spiral around the first conductor with interposition of the first electrically insulating material, and wherein the
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first electrically insulating material has a melting point of between 100 and 160 °C, preferably equal to about 120 °C.

- 5 9. Heat blanket according to claim 1, wherein the cut-off group comprises, in series on the power supply of the conductors, a first electronic operating switch, which activates or deactivates the electric conduction upon the command of the microprocessor based upon the temperature of the heating element.
- 10 10. Heat blanket according to claim 9, wherein the electric resistance of the heating element increases as the temperature increases and wherein the microprocessor detects the temperature of the heating element by a measurement of such an electric resistance.
- 15 11. Heat blanket according to claim 9, comprising an adjustable setting group of the temperature of the heating element connected to the microprocessor, and wherein the first electronic operating switch
- 20 activates or deactivates the electric conduction upon the command of the microprocessor also based upon the setting of the adjustable setting group of the temperature of the heating element.
- 25 12. Heat blanket according to claim 9, wherein the cut-off group comprises, in series on the power supply of the conductors and in series with the first electronic operating switch, a second electronic emergency switch.
- 30 13. Heat blanket according to claim 12, wherein the second electronic emergency switch is such as to interrupt the circuit unless it is receiving a predetermined signal which is dependent upon an output signal from the microprocessor.

14. Heat blanket according to claim 12, wherein the second electronic emergency switch is such as to interrupt the circuit in the case in which the resistance of the heating element exceeds a predetermined threshold, independently of any command of the microprocessor.
15. Heat blanket according to claim 14, wherein the predetermined threshold is adjustable through the adjustable temperature setting group.
16. Heat blanket according to any one of claims 3 to 15, comprising a signal indicator light, commanded by the microprocessor according to specific and different cycles according to the classification of the anomaly detected.
17. Heat blanket according to claim 16, comprising a timer for the automatic interruption of the power supply of the heat blanket after a predetermined time, such an automatic interruption being indicated by a specific indication cycle of the signal indicator light.
18. Heat blanket according to any one of the previous claims, comprising an on-off indicator light, to indicate the electric power supply of the heat blanket.
19. Heat blanket according to any one of claims 16 to 18, wherein the signal indicator light and the on-off indicator light are distinct and different from each other.
20. Heat blanket according to any one of the previous claims, wherein the microprocessor automatically and periodically activates a self-diagnosis procedure, simulating its own failure, checking the correct intervention of the cut-off group and finally either

restoring its operation in case of correct operation of the cut-off group or else indicating an anomaly in case of irregular operation of the cut-off group.

21. Heat blanket according to any one of claims 2 to 6,
5 wherein the need or suitability of programmed maintenance is established by the microprocessor based upon one or more of the following parameters:
- total time that the blanket has been switched on;
 - total lifetime of the blanket;
 - 10 - total number of switching on and off cycles undergone by the blanket;
 - number and type of anomalies detected.